



# Radiagem 2000 Portable Survey Meter & Probes

## Search and Secure Workshop



# Portable Survey Meter Radiagem 2000



- Referred to as Base Unit
- Measurement of ambient gamma Dose Equivalent Rate  $H^*(10)$  according to ICRU 39
- Dose Rate Range:  $0.1 \mu\text{Sv}/\text{h}$  to  $100 \text{ mSv}/\text{h}$
- Energy Range: from  $30 \text{ keV}$  to  $2 \text{ MeV}$
- Internal Detector: energy compensated G-M tube
- Preset alarm levels on Dose and Dose Rate
  - For INTERNAL detector and/or EXTERNAL probes
- Audible & Visual Alarms





# Radiagem 2000

## What is a Canberra SMART probe?



- Automatic recognition of probe
  - RadiagemTM applies a probe calibration coefficient
  - Select alarm thresholds from probe memory
- High Voltage Power Supply in Probe
  - Hot plug on meter without powering down instrument
  - Measurement starts immediately without any necessary setup
  - Measurement is not cable quality dependent
- Calibration data in probe memory
  - Each probe is independent from meter
  - Each probe is separately calibrated
  - Meter remains available during probe calibration process
- Probe includes
  - HVPS, Amplifier and Discriminator(s)
  - Calibration Data and ID
  - Alarm set points (10 for each unit to display) and default/last selection
  - Data Logging (up to 1000 points)





# Radiagem 2000





# Radiagem Start-Up and Self Checks



- To power on and test the system, press the button down long enough to hear a beep and for the display to appear, then release the button.
- Tests all the LCD segments (Figure 1), and activates the audible alarm (2 beeps)
- Then the Radiagem firmware Version: P2.xx is displayed
- Latest version of the Radiagem firmware is available for download from the Canberra website.

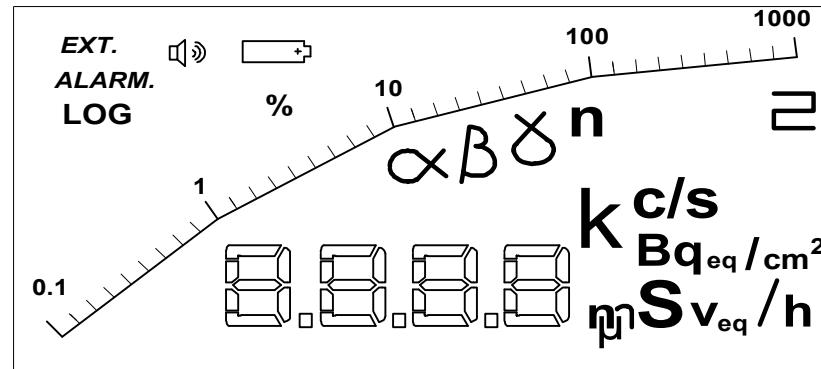


Figure 1.



# Battery Voltage Testing During Start-up



- Checks the battery voltage (Figure 2) and displays the percentage of battery capacity remaining. If the remaining capacity of the batteries is less than 10%, the battery symbol appears on the display in the measurement mode
- The system checks the remaining available battery capacity every minute. A test is carried out in relation to two levels: S1 = 1.8 V, S2 = 1.6 V.
- If the battery voltage falls between S1 and S2, the battery icon flashes on the display.
- The Radiagem switches off if the battery voltage drops below 1.6 V.

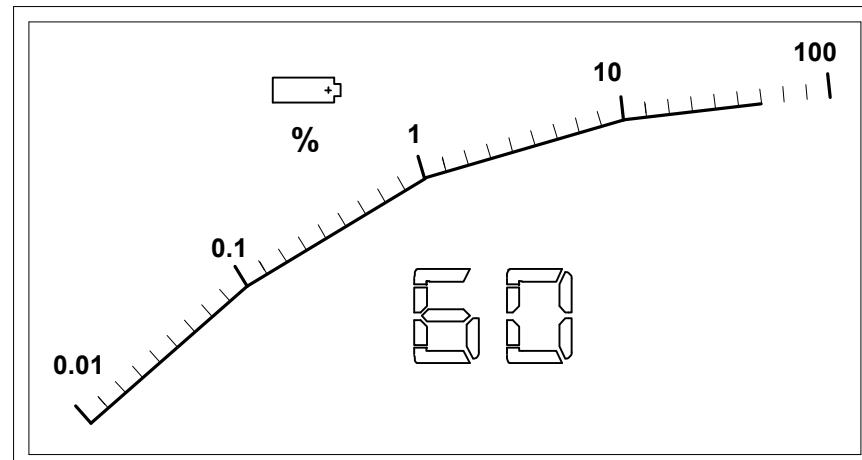


Figure 2.



# High Voltage

- The system checks the detector's polarization voltage (Figure 3) only if there is no probe connected.
- With a probe connected such as SG-2R, this screen will not appear on start-up
- The display shows the high-voltage reading, in Volts.

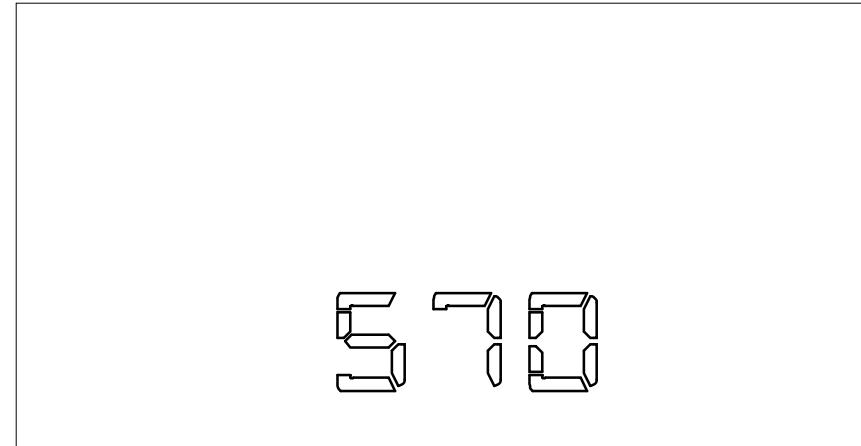


Figure 3.



# (Start-up Complete) Measuring Gamma Radiation Dose Equivalent Rate



- After the system checks have completed, the unit automatically defaults to the "MEASUREMENT" mode. Figure 4 appears on the display.
- Becoming familiar with typical background levels is a very good check for proper operation

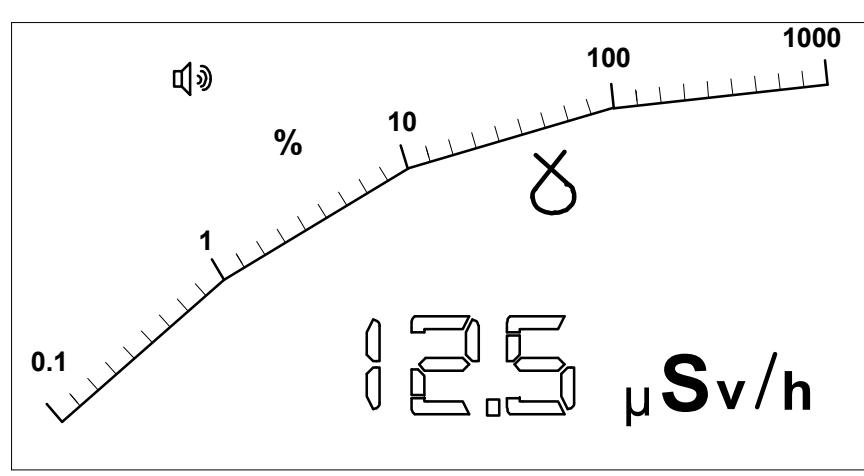


Figure 4.



# Audible Alarm

- When the device is powered on, detector pulses are not audible by default.
- To enable (or disable) the audible signal, simply press the audio button and the corresponding icon will flash on the display
- The pulses detected are audible up to 45 counts per second (cps).
- If the dose rate or the cumulative dose exceeds the alarm level, a warbling signal will sound.
- NOTE: Whether the user attempts to inhibit the audible alarm or not, the warbling sound continues to be emitted:
  - When a dose-rate alarm level is exceeded: successive audible beeps are heard.
  - When a cumulative dose alarm level is exceeded: two audible beeps are emitted per minute.



# Probe Identity Codes

- The RADIAGEM automatically detects the presence of a probe and downloads all of its operating parameters
- A probe can be connected to the Radiagem 2000 even if the Radiagem is switched on.
- As soon as a cable is connected to the Radiagem, it cycles through the start-up routine while searching for a probe and waiting for a probe connection.
- If an external probe is connected, the pulses of the detector internal to the Radiagem 2000 base unit are inhibited. The type of probe connected is shown on the display. For example, for an alpha/beta probe, the display indicates EXT. α/β.



# Unit of Measurement Change

- The unit of measurement changes automatically for each attached probe and the base unit; it is accompanied by an audible beep, as well as by a flashing display of the new unit for 20 seconds.

Dose rate	Sv/h (n, $\mu$ and m multiples)
Cumulated dose	Sv (eq) ( $\mu$ and m multiples)
Contamination	(k)c/s, (k) Bq equivalent ( $Bq_{eq}$ ), (k) Bq/cm <sup>2</sup> equivalent ( $Bq_{eq}/cm^2$ )
Bar-graph	4 decades from 0.1 to 1000
Probe type	$\alpha$ , $\beta$ , $\gamma$ , n
Data logging	LOG



# Proper Detector Function Testing

- The Radiagem continually checks to ensure the detector registers a minimum count rate (due to the  $\gamma$  environment). If no pulses are detected within 3 minutes, the system indicates there is a detector defect by displaying "FAIL" and by sounding 1 audible beep every 10 seconds
- The Radiagem signals the defect for as long as it persists
- The "FAIL" display appears in the following situations:
  - In case of fault in the programming of the Radiagem's internal parameters,
  - In case of fault in the programming of the probe's parameters,
  - If no count is detected by the probe within a time initialized in the probe or by the Radiagem for more than 3 minutes.



# Measurement Saturation



- The RADIAGEM activates both an audible and a visual alarm (the "ALARM" symbol flashes) when the dose rate measurement exceeds a probe's maximum measurable level.
- Radiagem 2000: above 100 mSv/h, "9999 Sv/h" flashes.
- Radiagem 2000 + Probe: at the saturation point of the probe, "9999 Sv/h" flashes.
- The ALARM and symbols also flash.





# Current Alarm Setpoints



- When in the Measurement Mode the Current Alarm Setpoints can be viewed
- Press the first and fourth buttons simultaneously. The Dose Rate Alarm will be momentarily displayed first followed by the Integrated Dose Alarm. The unit will automatically revert back to the Measurement Mode after a brief time
- Push quickly and firmly and hold for a second until a beep is heard
- *Note:* Alarm levels cannot be changed here, only viewed





# Radiagem Base Unit Factory

## Default Alarm Set Points



Units	Set Points										
mSv	.02	.05	.1	.25	.5	1	2	2.5	3	10	
mSv/hr	.0025	.0075	.025	.05	.1	.25	.5	1	2	5	

- Use the Canberra Smart Probe Software (CSPS) select the alarm set point and/or to change these values and write to base unit or probe
- Set all values to very high value to essentially disable the alarm





# Changing Alarm Set Point

- To Access Alarm Menu:
- Press the three buttons shown simultaneously
- Request for CODE is displayed as 0000 with the first 0 flashing
- Press the UP arrow button until the first digit reads 2, then press enter or log to accept value
- Code = 2000
- Press the LOG or enter button three more times to accept the 0 values for each of the remaining digits of the 2000 code to enter the Dose Rate alarm menu



**Note: The most likely error is to push the first and last button slightly before and display the current set-point**



# Alarm Menu Access

- Alarm Menu:
- Using either the Up or the Down arrow select the desired alarm setpoint from one of the ten available values
- Once the required Dose Rate alarm level is selected the Radiagem will switch to the Integrated Dose Alarm Level
- Select the Integrated Dose alarm level using either the up or down button
- Once the alarm levels have been selected the unit will switch from the alarm menu back to the Measurement mode





# Alarm Setpoint Exercise

- Using the method previously discussed change the Dose Rate Alarm value from it's current reading which should be 5 mSv/h to the new value of 2.5 uSv/h
- After changing the Dose Rate Alarm change the Integrated Dose Alarm from its current value which should be 10 mSv to the new value of 20 uSv.
- Once the instructors have verified your new alarm setpoints change the setpoints back to the original levels of 5 mSv/h and 10 mSv





# Integrated Dose

- When in the Measurement Mode the Current Integrated dose can be viewed. The dose starts at zero when the Radiagem is first turned on.
- ***Important!*** Connecting or disconnecting a probe runs through the start-up routine (turns it on) and therefore clears the cumulative dose (returns to 0 uSv).
- Pressing the first and the third buttons simultaneously will display the Current Integrated Dose.





# Highest Dose Rate

- When the Radiagem is in the Measurement Mode the Highest Dose Rate can be viewed
- Pressing the third and fourth button simultaneously will display the Highest Dose Rate the Radiagem has been exposed to since the unit has been turned on





# Sodium Iodide Probe – SG-2R



- Measurement of Ambient Gamma
- NaI(Tl) Detector
  - SG-2R: 2 inch (5cm) X 2 inch (5cm) crystal for high gamma sensitivity
- Display: c/s or Sv/h
- Connection: 1.5 m (5 ft) cable
- Locking cable connection





# Sodium Iodide Probe – SG-2R



- SG-2R probe is energy dependent but is able to infer H\*(10) for Cs-137 energy equivalent radio-isotopes.
- Each probe is able to store up to 1000 data points in its memory. All data-logging information is downloaded from probe memory to the computer via USB cable and utilizing the Canberra Smart Probe Software (CSPS)
- Energy ranges
  - 40 keV to 3 MeV
- Measurement ranges
  - 0 to 50 mSv/h
  - 0 to 90 kc/s





# Sodium Iodide Probe – SG-2R



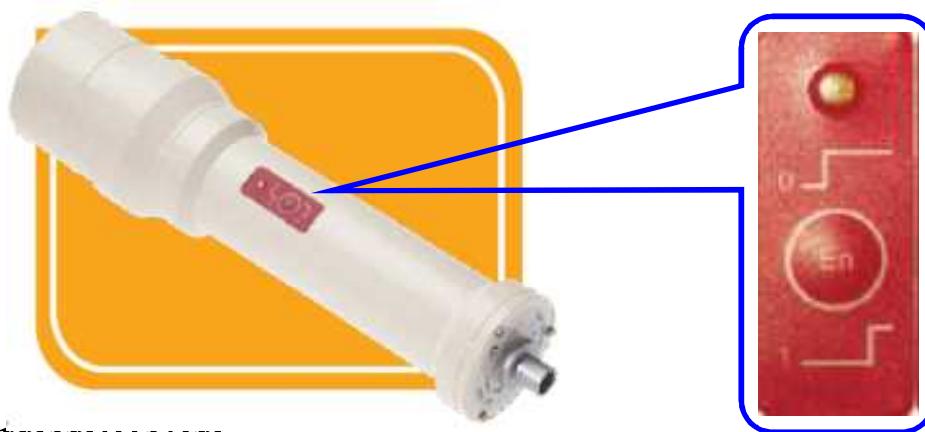
- Measurement of Ambient Gamma
  - Primary probe for locating low activity sources
  - Isolate “Hot Spots” in drums, sealants, etc.
- Ambient background for the 2X2 detector will exceed the 40 cps audible limit to distinguish counts or clicks.
- Use the head phone adapter (Audio-R) to utilize the audible feature for sodium iodide probes of 2X2 or larger or for other probes in a noisy environment

**AUDIO-R**





# Sodium Iodide Probe – SG-2R



- Energy discrimination
  - A push-button located on the probe housing triggers a high energy threshold. When depressed and held, an LED is activated and the probe only measures gamma levels above the preset threshold
  - This feature allows you to detect the presence of a specific isotope like  $^{60}\text{Co}$ .
- Energy discrimination
  - Energy threshold is set with CSPS (Canberra Smart Probe Software) and a computer
  - Level is set in units of milli-volts with automatic data collection plateau performed by CSPS



# Sodium Iodide Probe – SG-2R



- USE
  - A probe may be connected to the host instrument even if it is switched on (hot plugged). The host instrument automatically detects the presence of a probe.
  - Unit selection is performed when the host instrument is switched on.
  
- Changing Units
  - Upon power up the units will flash
    - While the units are still flashing press the up arrow.
    - When the desired units are obtained, wait 3 seconds and the units will be locked in.





# SG-2R Factory Default Alarm Set Points



Units	Set Points									
	c/s	434	723	1156	2890	4335	11561	14452	28903	57806
$\mu\text{Sv}(\text{eq})$	1	2	4	8	20	40	80	200	400	800
$\mu\text{Sv}(\text{eq})/\text{hr}$	0.2	0.3	0.5	0.8	2	3	8	10	20	40

- Once the alarm set point is chosen it will be written, stored to the probe, and remain until changed again.
- Use the CSPS software to change these values and write to probe
- Choose an alarm set point at 2 to 3 times the background value for example to alert you to the presence of radiation significantly above background
- Set all values to very high value to essentially disable the alarm



# Sodium Iodide Probe- Exercise



- With the SG-2R Probe connected to the Radiagem, select units of c/s by pressing the up arrow while the units are flashing
- Use a source to test your alarm set point
- Find other sources in the vicinity
- Use the method previously discussed to change the Count Rate Alarm value from it's current reading to a new value of your choice, such as the setpoint nearest to 2 to 3 times background (optional)





# Alpha, Beta, Gamma Probe – **SABG-15 or SABG-15+**



- Alpha, Beta-Gamma Surface Contamination
  - Free Release of:
    - Floors
    - Personnel
    - Tools
    - Work Areas
    - Waste





# Alpha, Beta, Gamma Probe SABG-15 or SABG-15+



- The probe enables a, b, and g surface contamination to be monitored
- The probe is based on a GM tube and has its own high voltage power supply
- The probe can be connected directly or via a 1.5 m cable
- Can detect some alpha but with very low efficiency



SABG-15+



SABG-15



# Alpha, Beta, Gamma Probe

## SABG-15 and SABG-15+



- Lowest Gamma Energy
  - 30 keV
- Detection area
  - 15.5 cm<sup>2</sup>
  - 75% open screen
- Measurement range:
  - 1 to 9999 c/s
- Secondary Instrument for contamination control and investigation

Its detection area is equal to 15.5 cm<sup>2</sup>.





# Alpha, Beta, Gamma Probe SABG-15 Alarm Set Points



Units	Set Points										
	1.2	2.4	6	12	24	60	240	600	2400	4500	
c/s	1.2	2.4	6	12	24	60	240	600	2400	4500	
Bq (eq)	6	12	30	60	120	300	1200	3000	12000	22500	
Bq (eq)/cm <sup>2</sup>	0.4	.8	2	4	8	20	80	200	800	1500	

- Use the CSPS software to change these values and write to probe
- Set all values to very high value to essentially disable the alarm



# Alpha, Beta, Gamma Probe

## SABG-15 Exercise



- With the SABG-15 Probe connected to the Radiagem:
- Use a source to verify the alarm setpoint
- Enable the audio and use the cover to determine if the source is primarily alpha, beta, or gamma radiation or a mix
- Use the method previously discussed to change the c/s or activity Alarm setpoint from it's current reading to a new value of your choice (optional)





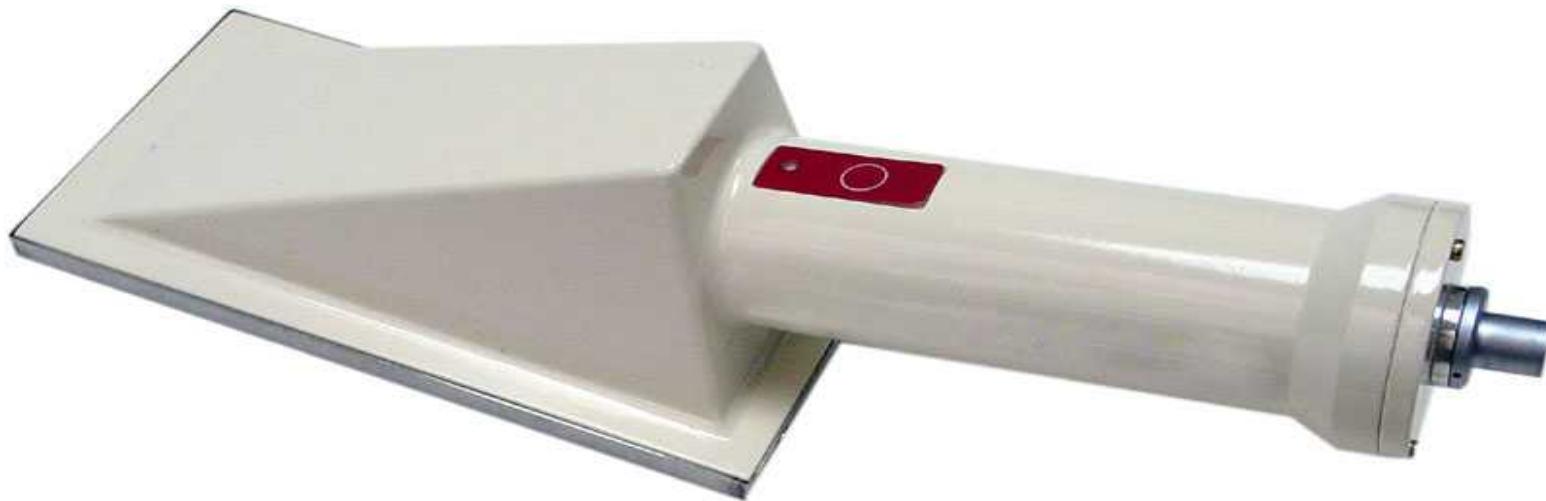
# SAB-100 $\alpha/\beta$ Contamination Probe



- Enables the following three types of radiation to be measured:
  - Alpha radiation alone
  - Beta radiation alone
  - Alpha and beta radiation combined
- Stores up to 1000 data points in its memory
- The mixed probe uses a scintillator consisting of a scintillating film ( $ZnS (Ag)$ ) deposited on a 0.5 mm thick scintillating plastic



# SAB-100 α/β Contamination Probe



- Large Area Contamination Probe
  - 100 cm<sup>2</sup> Plastic Scintillation Detector
  - Survey personnel
  - Free release tools and clothing
  - Free release floors/work areas
- Secondary Instrument
- Also with locking cable connector



# SAB-100 $\alpha/\beta$ Contamination Probe



- On the Radiagem Base Unit:
  - Measures and displays  $\alpha$ ,  $\beta$  or  $\alpha + \beta$  according to the push-button position.
- On the probe:
  - $\beta$  only: LED on
  - $\alpha$  only: LED off
  - $\alpha + \beta$ : LED blinking





# SAB-100 $\alpha/\beta$ Contamination Probe



- Connect the probe to the FISCHER S0V 104 A086-160 socket of the Radiagem via a 1.50 m cable (code 77336)
- A probe can be connected to the host instrument even if it is switched on. The host instrument automatically detects the presence of a probe
- Unit selection is performed when the host instrument is switched on.



# SAB-100 $\alpha/\beta$ Contamination Probe



- For alpha or beta mode, the user may select the units and an alarm set point for each (3 units for alpha and 3 units for beta)
- There is only one alarm set point for  $\alpha + \beta$  and that is counts per second (cps)
- Total of 7 alarm set points for this probe



## **$\alpha/\beta$ Contamination Probe SB 100 Default Alarm Set Points in Alpha Mode**

Units	Set Points									
c/s	0.4	0.8	4	8	40	80	200	800	4000	8000
Bq (eq)	4	8	40	80	400	800	2000	8000	40000	80000
Bq (eq)/cm <sup>2</sup>	0.04	0.08	0.4	0.8	4	8	20	80	400	800

## **$\alpha/\beta$ Contamination Probe Default Alarm Set Points in Beta Mode**

Units	Set Points									
c/s	8	16	40	80	160	400	800	1600	4000	8000
Bq (eq)	40	80	200	400	800	2000	4000	8000	20000	40000
Bq (eq)/cm <sup>2</sup>	0.4	0.8	2	4	8	20	40	80	200	400

## **$\alpha/\beta$ Contamination Probe Default Alarm Set Points in Alpha + Beta Mode**

Units	Set Points									
c/s	8	16	40	80	160	400	800	1600	4000	8000



# SAB-100 α/β Contamination Probe Exercise

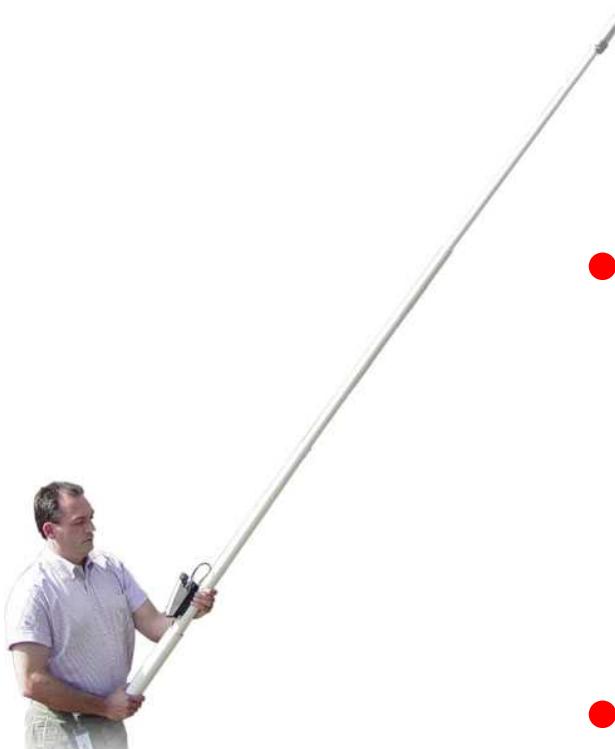


- With the SAB-100 Probe connected to the Radiagem and for each of the three operating modes:
- Select units of counts per second (c/s)
- Using the red button on the back of the probe, select the alpha operating mode
- Using the 3 button method, set the desired alpha alarm setpoint in c/s
- Repeat for other units and also for beta and alpha + beta
- Enable audio and use shielding to determine if sources are primarily alpha, beta, or a mix





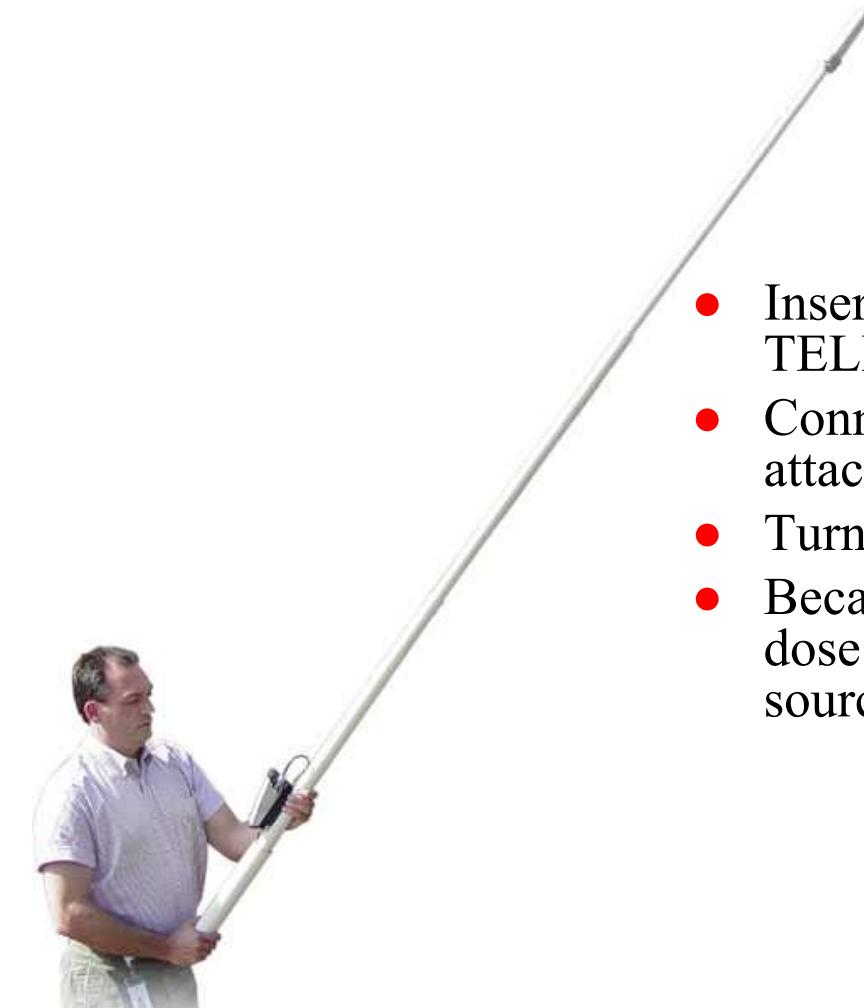
# High Dose Rate Gamma Telescopic Probe TELE SHDE



- High Dose Rate Gamma Telescopic Probe
  - G-M Probe for high dose Gamma Only
  - Range: 1  $\mu\text{Sv/h}$  to 10  $\text{Sv/h}$  (Cs-137)
  - Requires Radiagem for operation
  - Difficult to reach areas, extends to 4 meters
  - HIGH Dose Rates
- Secondary Instrument



# High Dose Rate Gamma Telescopic Probe TELE SHDE



- Insert the Radiagam into the plastic holder on the TELE SHDE using a rotating motion
- Connect the TELE SHDE to the Radiagam via the attached cable lead
- Turn on the audible feature (sound)
- Because the TELE SHDE measures such high dose rates, relatively few counts will be heard for sources and even fewer for background



# High Dose Rate Gamma Telescopic Probe TELE SHDE



## Alarm Set Points

Units	Set Points									
mSv(eq)	.25	.5	1	2	2.5	3	10	25	100	200
mSv(eq)/hr	1	2	2.5	3	10	25	100	500	1000	2500



# High Dose Rate Gamma Telescopic Probe TELE SHDE



## Exercise

- With the TELE SHDE Probe connected to the Radiagem:
- Enable the audio and use the instrument to measure a source and see if the alarm can be triggered
- Use the method previously discussed to change the Dose Rate Alarm value from it's current reading to a new value of your choice (optional)
- After changing the Dose Rate Alarm change the Integrated Dose Alarm from it's current value to a new value of your choice.





# Telescoping Pole

- Use to connect any probe for a 1.5 to 2 meter extension
- Lightweight and easy to carry



Cable Guide



# Appendix

## -Canberra Smart Probe Software



# Get The Most Current Firmware Update File for the Radiagem 2000



Go to the following site for Health Physics Software updates (HPSW updates)

CANBERRA, Measurement Solutions for Nuclear Safety and Security | Radiation Detection - Windows Internet Explorer

http://www.canberra.com/

Welcome to **CANBERRA**, Measurement Solutions for Nuclear Safety and Security.

REGIONAL ACCESS  
USA

EXTRANET ACCESS  
select a site  
select a site  
CINET Extranet  
HIS-20 Extranet  
HP SW Updates

PRODUCTS / SOLUTIONS »  
» Counting Room / Laboratory Systems  
» Detectors  
» Health Physics / Environmental Monitoring

PRODUCT IN FOCUS »  
**GPS-COM**  
» Remote Data Transfer for UltraRadiac™

BUSINESSES »  
  
» Nuclear Power

Internet 100%

The screenshot shows a Windows Internet Explorer window displaying the website for CANBERRA, Measurement Solutions for Nuclear Safety and Security. The page features a red header and sidebar. A blue callout box with an arrow points from the text "Go to the following site for Health Physics Software updates (HPSW updates)" to the "HP SW Updates" link in the bottom left corner of the extranet access section. The main content area includes a welcome message, a large image of radiation detection equipment, and sections for products, solutions, and business focus areas like GPS-COM and Nuclear Power.



# Login to the HP SW Updates Page

Fill in Login and Password as follows

Login Name: **hp user**

Password: **Canberra#1**

Canberra Extranet Login - Windows Internet Explorer  
https://www2.canberra.com/INTERNET/SWFirm

File Edit View Favorites Tools Help

Canberra Extranet Login

A CANBERRA

Home > CANBERRA EXTRANET LOG-IN

Registered Users:

Login Name

Password

Login Register with CANBERRA

Need to [change your password?](#)  
Did you [forget your password?](#)

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Done Internet 100%



# Copy the latest Radiagem 2000 Firmware Update File

► EVENTS  
► PRODUCTS  
► SUPPORT  
► TRAINING  
► LITERATURE  
► OFFICES  
► CAREERS  
► CONTACT

SEARCH

**Product Software and Firmware Updates**

> Downloads  
> General Information

Current View:	Downloads
CSP COM	
2.0	<a href="#">10/03/2008</a>
CSPS	
<a href="#">V1.10</a>	<a href="#">03/19/2006</a>
<a href="#">V1.20</a>	<a href="#">11/19/2007</a>
<a href="#">V2.0</a>	<a href="#">10/28/2009</a>
<a href="#">V2.10</a>	<a href="#">10/05/2010</a>
CSPS PLUG-IN	
<a href="#">SABG-15+ V1.0</a>	<a href="#">01/12/2010</a>
omniTrak	
<a href="#">5.3</a>	<a href="#">07/03/2009</a>
Radiagem 2000	
<a href="#">V2.19</a>	<a href="#">02/09/2006</a>
<a href="#">V2.21</a>	<a href="#">10/25/2007</a>
<a href="#">V2.23</a>	<a href="#">02/23/2009</a>
<a href="#">V2.22</a>	<a href="#">03/31/2008</a>
<a href="#">V2.18</a>	<a href="#">11/24/2005</a>
Radiagem 4000	
<a href="#">V4.19</a>	<a href="#">02/09/2006</a>
<a href="#">V4.21</a>	<a href="#">10/25/2007</a>

Internet 100% 9 - 48

- The current firmware for Radiagem 2000 is V2.23
- Version 2.20 was minimum needed for the Audio-R to work
- Version 2.23 is needed for the base unit to work with the new TELE-STTC telescoping probe
- The needed file is Radiagem\_2000\_v23.hex



# CSPS – Canberra Smart Probe Software



## Features:

- ▶ Set-up and Calibrate Radiagem and Probes
- ▶ Check all operational parameters
- ▶ Edit and select alarm set points
- ▶ Manage logged data
- ▶ Upgrade Radiagem and Probe firmware
- ▶ QA instrument Diagnosis





# CSPS – Canberra Smart Probe Software



## Model CSPS Canberra Smart Probe Software

### Security

Users, service personnel and administrators log in to CSPS with a dedicated password that opens various lists of features:

Operations	Ability to Perform the Operation	
	Administrator	User
Adding a user to the users list	X	-
Removing a user from the users list	X	-
Changing user settings	X	-
Changing current user mode	X	X
Operational tests on Radiagem meter	X	X
Manual conversion coefficient input	X	-
Radiagem alarm threshold edition	X	-
Smart Probes alarm threshold edition	X	-
Data logging	X	X
Smart Probes measurements acquisition	X	X
Radiagem calibration parameters	X	-
Smart Probes calibration parameters	X	-



# CSPS – Log-in & Main Menu



► Use Administrator mode for most functions

► Select the type of probe from the tabs along the top and then select the model of probe you have from the buttons



# Use CSPS To Change Alarm Set Points By Typing In New Values and Writing to the Probe



**A Probe settings - factory level**

**SG-1R**

**Identification**

Serial number :  Modify      Type :  Channel 2 Calibration  
Firmware release :  Detector size :  Date : 23-09-05 - 16:27:25

**Status**

Supply voltage :  V       International System unit  
High Voltage :  V       USA System unit  
Discrimination threshold :  mV      Current unit :  OK

**Configuration**   **Alarm threshold**   **Manufacturer alarm threshold**

Current unit :

C/S		Sveq		Sveq/h	
Gamma	Unit	Gamma	Unit	Gamma	Unit
115.0	(* 1)	2.000	$\mu$ (* 1e-6)	400.0	$n$ (* 1e-9)
150.0	(* 1)	4.000	$\mu$ (* 1e-6)	500.0	$n$ (* 1e-9)
231.0	(* 1)	8.000	$\mu$ (* 1e-6)	800.0	$n$ (* 1e-9)
577.0	(* 1)	20.00	$\mu$ (* 1e-6)	2.000	$\mu$ (* 1e-6)
865.0	(* 1)	40.00	$\mu$ (* 1e-6)	3.000	$\mu$ (* 1e-6)
2.307	k (* 1e3)	80.00	$\mu$ (* 1e-6)	8.000	$\mu$ (* 1e-6)
2.884	k (* 1e3)	200.0	$\mu$ (* 1e-6)	10.00	$\mu$ (* 1e-6)
11.54	k (* 1e3)	400.0	$\mu$ (* 1e-6)	40.00	$\mu$ (* 1e-6)
23.07	k (* 1e3)	800.0	$\mu$ (* 1e-6)	80.00	$\mu$ (* 1e-6)
46.14	k (* 1e3)	1.000	m (* 1e-3)	160.0	$\mu$ (* 1e-6)

**C/S**   **Sveq**   **Sveq/h**

Write      Write      Write

Read

The 'Alarm threshold' tab is selected.

A black oval highlights the value '150.0' in the 'C/S' table under the 'Unit' column.



# Use CSPS to set ID Control & Calibration Parameters



**A Probe settings - factory level**

**SG-1R**

**Identification**

Serial number :  Modify    Type :  Channel 2 Calibration  
Firmware release :  Detector size :  inch Date : 23-09-05 - 16:27:25  
Source :   
Emitter :

**Status**

Supply voltage :  V     International System unit  
High Voltage :  V     USA System unit    **OK**  
Discrimination threshold :  mV    Current unit :

**Configuration | Alarm threshold | Manufacturer alarm threshold**

**Electronic setting**

High Voltage :  V          
Electronic discriminator :  mV      
Energy discriminator :  mV      
Gain :

**Functioning mode**

Discriminator     Electronic     Energy

**Physics setting**

Gamma

Coefficient (cps/ $\mu$ Sveq/h) :       
Saturation :  cps  
Low threshold Bkg Timeout :  s

**Parameters reading**    **Parameters writing**



# Use CSPS to Collect Data and Determine Calibration Parameters



A Conversion coefficient calculation cps/ $\mu\text{Sv eq}/\text{h}$  : GAMMA

Measure

Measure number to realize : 3 measures

Dose rate	Integration time	Count	Action
Dose rate n°1 Dose rate n°1 : 10.00 <input type="button"/> $\mu\text{Sv}/\text{h}$	10 <input type="button"/> s	<input type="text"/> c	<input type="button"/> Start
Dose rate n°2 Dose rate n°2 : 20.00 <input type="button"/> $\mu\text{Sv}/\text{h}$	10 <input type="button"/> s	<input type="text"/> c	<input type="button"/> Start
Dose rate n°3 Dose rate n°3 : 100.00 <input type="button"/> $\mu\text{Sv}/\text{h}$	10 <input type="button"/> s	<input type="text"/> c	<input type="button"/> Start

Last ajustment

Date : 23-09-05 - 16:27:25

Reference source : Cs137      Source emitter : Gamma      Conversion coefficient : 0.003792

Adjust parameters

Date : Thursday, February 23, 2006 12:10:31 PM

Reference source : Cs137      Source emitter : Gamma

Conversion coefficient calculation cps/ $\mu\text{Sv eq}/\text{h}$  : GAMMA

Calculate     

Probe adjust parameters writing

Write



# CSPS – Canberra Smart Probe Software On-Line Acquisition





# Use CSPS To Retrieve Logged Data And To Setup Data Logging Parameters



Reading Data Logging | Data Logging Settings |

Data Logging settings

Data Logging Index

Current Index :  (range : 1 ... 1000)

New :  Set the new Index

Preselected Integration Time

Current Preselected Time :  s (range : 0 ... 255 s)

New :  s Set the new Pretime

File settings

File Format selection

Excel Compatible format (\*.csv)

Text format (\*.txt)

User File Name

Default File Name : SG-1R\_00025\_0000.csv

User Defined Name :   Position 1  Position 2  Position 3

File Name Example : SG-1R\_FM\_00025\_0001.csv

Path settings

Default Path : C:\Canberra Smart Probe Software\Logging\

User Path :  Choose Directory



# CSPS Example of Logged Data



Reading Data Logging | Data Logging Settings

Index	Date	Time	Integration	Gamma Measurement	Unit	Time
0001	15/11/2005	19:13:07	No	4.67e-002	µSv <sup>-1</sup> /h	
0002	15/11/2005	19:13:17	No	5.87e-002	µSv <sup>-1</sup> /h	
0003	15/11/2005	19:13:27	No	5.88e-002	µSv <sup>-1</sup> /h	
0004	15/11/2005	19:13:40	No	5.94e-002	µSv <sup>-1</sup> /h	
0005	15/11/2005	19:14:01	Yes	6.19e-002	µSv <sup>-1</sup> /h	3 s
0006	15/11/2005	19:14:30	Yes	5.76e-002	µSv <sup>-1</sup> /h	5 s
0007	.../.../...	00:00:00	No	0.00e+000	c/s	
0008	.../.../...	00:00:00	No	0.00e+000	c/s	
0009	15/11/2005	19:14:52	No	6.54e-002	µSv <sup>-1</sup> /h	
0010	.../.../...	00:00:00	No	0.00e+000	c/s	
0011	.../.../...	00:00:00	No	0.00e+000	c/s	
0012	18/11/2005	10:51:31	No	3.61e-002	µSv <sup>-1</sup> /h	
0013	.../.../...	.../.../...	Yes	...	...	255 s
0014	.../.../...	.../.../...	Yes	...	...	255 s
0015	.../.../...	.../.../...	Yes	...	...	255 s
0016	.../.../...	.../.../...	Yes	...	...	255 s
0017	.../.../...	.../.../...	Yes	...	...	255 s
0018	.../.../...	.../.../...	Yes	...	...	255 s
0019	.../.../...	.../.../...	Yes	...	...	255 s
0020	.../.../...	.../.../...	Yes	...	...	255 s
0021	.../.../...	00:00:00	No	0.00e+000	c/s	

Settings

Reading parameters

Complete (index 1 to 1000)

Partial (1 to 3 parts)

Part 1 from index:  to

Before Index (>>> 22) Nb:  Index

After Index (22 >>>) Nb:  Index

Filter invalid recording

Data Recording

Path: C:\...\DataLogging

File name: SG-1R\_00025\_0000.csv